



AGENDA

SANTA FE RIVER
COMMISSION
APRIL 08, 2021
6:00 PM
ATTEND VIRTUALLY

SPECIAL PROCEDURES FOR SANTA FE RIVER COMMISSION MEETING

Attendance: In response to the State's declaration of a Public Health Emergency, the Mayor's Proclamation of Emergency, and the ban on public gatherings in excess of those permitted in the current Public Health Order, the Santa Fe River Commission meeting will be conducted virtually.

Viewing: Members of the public may join the Zoom meeting by internet or phone, as follows:

Internet: To join the Zoom meeting on the internet using a computer, laptop, smartphone, or tablet, use the following link: <https://santafenm-gov.zoom.us/j/96312146548?pwd=RHE1L25MK0xMSCt4dUVzY3JONzBIQT09>.

Passcode: 186325

Attendees should use the "Raise Hand" function to be recognized by the Chair to speak at the appropriate time.

Phone: To join the Zoom meeting using a phone, use the following phone numbers and Webinar ID: **US: 1 (346) 248-7799 - Webinar ID: 963 1214 6548 - Passcode: 186325**

Phone attendees should press *9 to use the "Raise Hand" function to be recognized by the Chair to speak at the appropriate time.

The agenda and packet for the meeting will be posted at <https://santafe.primegov.com/public/portal>.

1. **CALL TO ORDER**
2. **ROLL CALL**
3. **APPROVAL OF AGENDA**
4. **APPROVAL OF MINUTES**
 - a. 1/14/2021 Meeting Minutes
5. **COMMUNICATIONS FROM OTHER AGENCIES/COMMITTEES**



AGENDA

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- a. SFWA Report (Andy Otto, Director, Santa Fe Watershed Association andy@santafewatershed.org)

6. INFORMATIONAL ITEMS

- a. ASR- Aquifer Storage and Recovery in the Santa Fe River Watershed (Bill Schneider, Water Resources Manager whschneider@santafenm.gov, 955.4203)

7. DISCUSSION AND ACTION ITEMS

- a. Discussion of the 2021-2022 Living River Flows and Target Flow Hydrograph (Alan Hook, Water Resources and Conservation Coordinator aghook@santafenm.gov, 955.4205)
- b. Approval of the 2021-2022 Living River Target Flow Hydrograph

8. MATTERS FROM STAFF

- a. Staff update (Zoe Isaacson, River and Watershed Project Administrator zrisaacson@santafenm.gov, 955.6985)
 - Stormwater Survey
 - Virtual River Talks Series

9. MATTERS FROM THE PUBLIC

10. MATTERS FROM THE COMMISSION

- a. Working group updates and status reports (Rachel Kullman, Chair rachel@kullmanwater.com and Heidi Klingel heidiklingel@hotmail.com)
 - Keep it Clean, We're ALL Downstream
 - Stormwater Story Maps
- b. Establishing additional working groups (Rachel Kullman, Chair rachel@kullmanwater.com)



AGENDA

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ATTEND VIRTUALLY

- c. Santa Fe River Commission Stewardship Team (Rachel Kullman, Chair
rachel@kullmanwater.com)

11. **NEXT MEETING: Thursday, July 8, 2021**

12. **ADJOURN**

Persons with disabilities in need of accommodations, contact the City Clerk's office at 955-6521, five (5) working days prior to meeting date.



MINUTES

SANTA FE RIVER
COMMISSION
JANUARY 14, 2021
6:00 PM
VIRTUAL MEETING

1. **CALL TO ORDER**
2. **ROLL CALL**

Members Present:

Member Vanessa Springer
Member Phil Bove
Member Rachel Kullman
Member Anna Hansen
Member Susan Coulter

Members Excused:

Member Emile Sawyer
Member Heidi Klingel
Member Andrew Black

Others Attending:

Jeff Norris, Assistant Legislative Liaison
Melissa McDonald, Parks Division Director
Zoe Isaacson, River and Watershed Project Administrator

3. **APPROVAL OF AGENDA**

MOTION: Member Hansen moved, seconded by Member Coulter, to approve the agenda as presented.

VOTE: The motion was on the following Roll Call vote:

For: Member Springer, Member Bove, Member Kullman, Member Hansen, Member Coulter

Against: None



MINUTES

SANTA FE RIVER
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Abstain: None

4. APPROVAL OF MINUTES

MOTION: Member Coulter moved, seconded by Member Hansen, to approve 11/19/19 meeting minutes the as presented- motion to approve by Susan Coulter second Commissioner Anna Hansen

VOTE: The motion was on the following Roll Call vote:

For: Member Springer, Member Bove, Member Kullman, Member Hansen, Member Coulter

Against: None

Abstain: None

5. COMMUNICATIONS FROM OTHER AGENCIES/COMMITTEES

- a. Santa Fe Watershed Association Updates and Status Reports- Andy Otto, Director, Santa Fe Watershed Association
- b. Year to Date 2020-21 Santa Fe River Target Flow Releases and Preliminary 2020 Water Budget for the Upper Santa Fe River (Alan G. Hook, Water Resources & Conservation Coordinator, aghook@santafenm.gov, 955.4205 & Bill Schneider, Water Resources Manager, whschneider@santafenm.gov, 955.4203)

6. DISCUSSION AND ACTION ITEMS

- a. City of Santa Fe Stormwater Management Including MS4 Permit Compliance (Melissa McDonald, River and Watershed Manager, mamcdonald@santafenm.gov, 955.6480 & David Pike, Stormwater Compliance Officer, dnpike@santafenm.gov, 955.2134)
- b. Working Group Discussion and Development (Rachel Kullman, Chair, rachel@kullmanwater.com)



MINUTES

SANTA FE RIVER
COMMISSION
JANUARY 14, 2021
6:00 PM
VIRTUAL MEETING

Working groups were developed for the following projects:

Scoop the Poop Campaign (public outreach and education)- Vanessa Springer and Rachel Kullman

Stormwater Story Map (public outreach and education)- Rachel Kullman, Susan Coulter and Heidi Klingel

7. **MATTERS FROM STAFF**
8. **MATTERS FROM THE PUBLIC**
9. **MATTERS FROM THE COMMISSION**
10. **NEXT MEETING: Thursday, April 8, 2021**
11. **ADJOURN**

Persons with disabilities in need of accommodations, contact the City Clerk's office at 955-6521, five (5) working days prior to meeting date.

Zoe Isaacson

Liaison

Rachel Kullman

Chair

Signature: *Rachel Kullman*
Rachel Kullman (Jan 15, 2021 11:58 MST)

Email: rachel@kullmanwater.com






Minutes_20210115184738262

Final Audit Report

2021-01-15

Created:	2021-01-15
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Santa Fe Watershed Association

January - February 2021

www.santafewatershed.org



Wintertime on the River

January, the beginning of a new volunteer season, was a busy month. Forty-nine volunteers generously spent ~2 hours each to help remove a total of 64 bags of trash from the Santa Fe River, even though the river was very icy. We'd like to thank Ros Rody's Jamaican Food Truck, Waldorf Elementary School, the Sierra Club and an extraordinary Angel Volunteer team, Meow Wolf, for their commitment to our watershed.

Love Your River Day 2021



RIVER NEWS

Love Your River Day, our first big event of the year, in partnership with the City of Santa Fe Parks and Open Space, was held over three days. Despite extreme weather warnings, about 80 volunteers from the community and our Adopt Teams put tons of positive energy into removing litter from our river. *Goodby 96 bags of trash!* Our outstanding volunteers worked under mostly sunny skies to clean up the river from Sandoval Street to the San Isidro crossing and then as far down as La Cienegilla! Additionally, parts of the Arroyo Pinos, Chamiso, and Cabra are minus *39 bags of trash!*

Even though welcome snows shortened the event by one day, it was a huge success. It would not have been possible without our wonderfully hardworking volunteers and our event sponsors like *Outside Magazine, Baja Taco, Tom Gallegos of NM True, and NM Dept of Cultural Affairs.*

We'd also like to extend a huge thanks to our enthusiastic volunteers from the community of Santa Fe and our Adopt the River and Arroyo Teams who made such a positive difference- *Easy Way, WWOW, Desert Montessori, Santa Fe High School, Santa Fe Indian School, Rotary Club of SF, Waldorf Elementary, and Santa Fe High School Biology Class.* Plus a special thank you to a throng of angel volunteers from the *Village of Agua Fria and Southwest Explorers League.*

SPONSOR THANK YOU

Larry &
Lori Gibson

A big thank you to the Gibson's for sponsoring the Arroyo Pinos and supporting the work of Santa Fe High School's Biology/NHS arroyo team lead by Richard Pitman!

ARROYO NEWS

Much of what the Santa Fe Watershed accomplishes is done with the help of volunteers who generously give their time to keep our watershed healthy, so we'd like to give a round of applause to one of our tireless Arroyo Steward Team leaders, Richard Pitman, Santa Fe High School's star AP/Honors Biology teacher and winner of New Mexico's Golden Apple Award for excellence in teaching. Thank you for all that you do!



UPCOMING EVENTS

MARCH 5 -19

Join the SFWA for our second Winter Watershed Benefit event of 2021! A virtual silent auction where you can bid any time between March 5-19 for items and experiences including:

- Lisa Law Print "Kids in the Corn, Truchas, NM, 1973"
- Prints of Photo Contest Winners
- Geronimo's Dining
- Ghost Ranch Stay
- Black Mesa Winery Tasting

[Link to my website](#)

MARCH 18 5:00

Join SFWA our Winter Watershed Benefit event of 2021! See our custom short film and learn about the **State of the Watershed**

[Link to my website](#)

Contact Us | Phone:505-820-1696 | info@santafewatershed.org

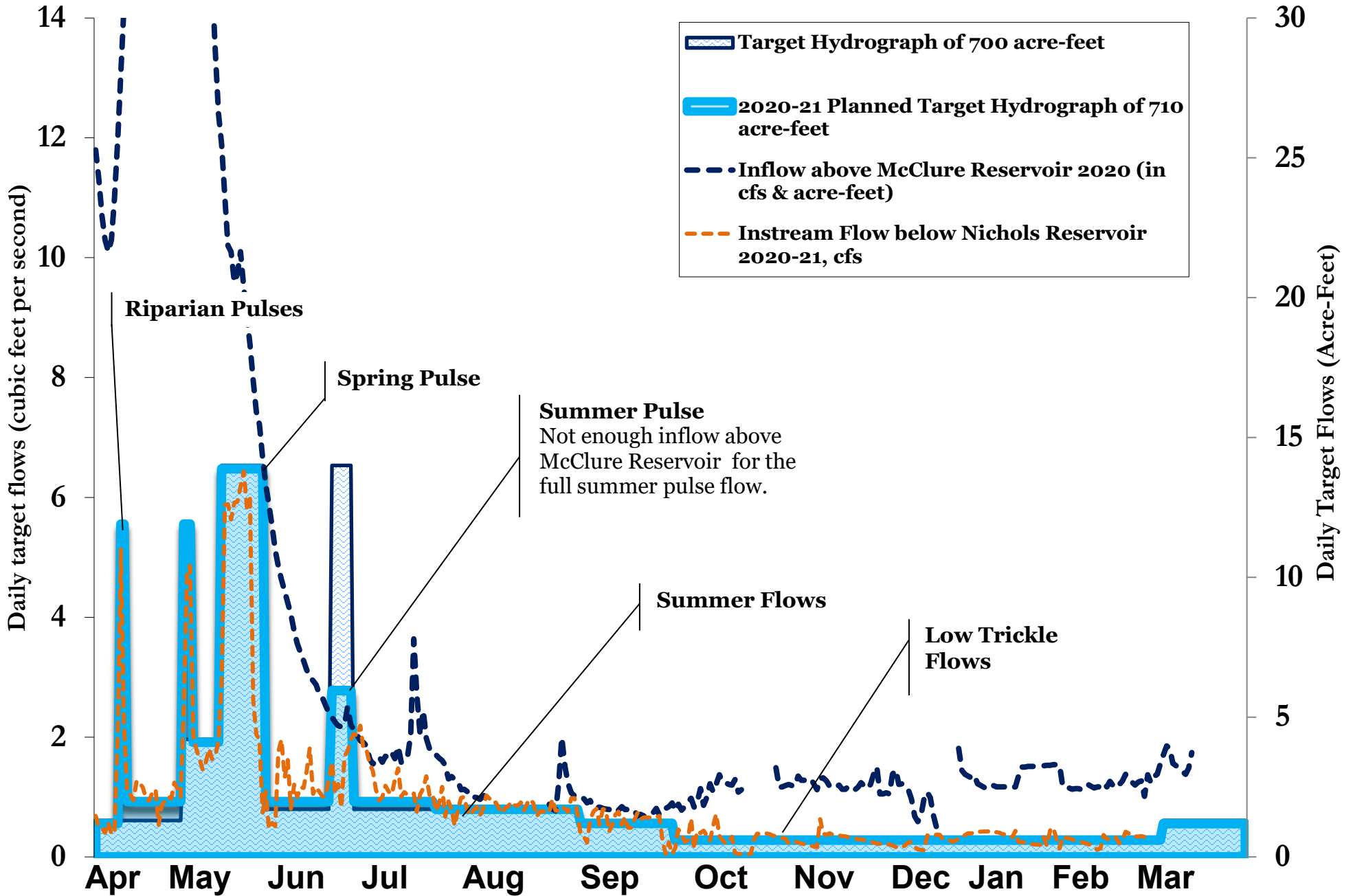
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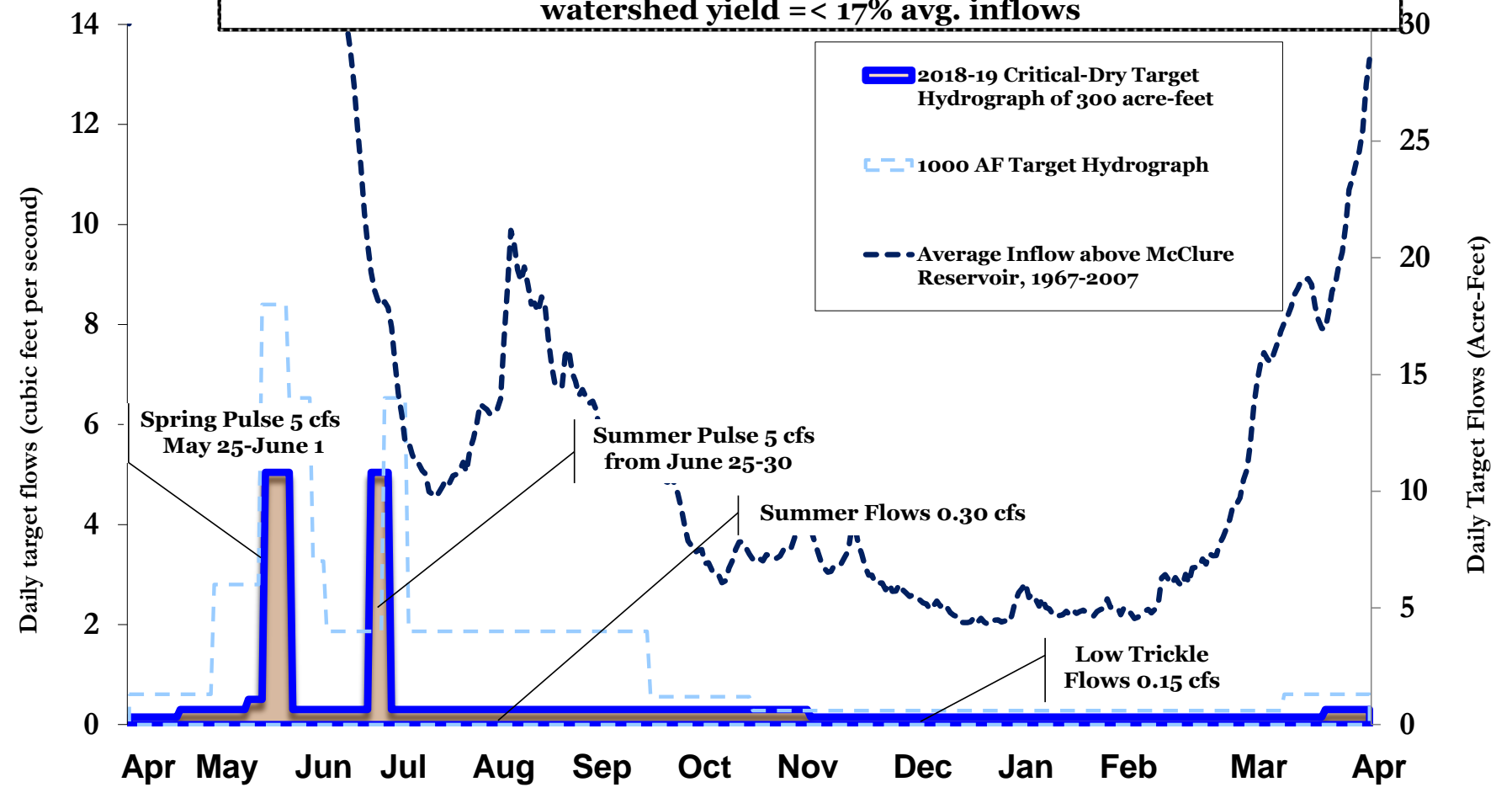


[Read](#) the VerticalResponse marketing policy.

2020-21 SANTA FE TARGET FLOW HYDROGRAPH: 710 af Target Flows, forecasted watershed yield = < 71% of avg. inflows



2018-19 LIVING RIVER HYDROGRAPH: 300 af Target Allocation, anticipated watershed yield = < 17% avg. inflows



USDA NRCS National Water & Climate Center
 * - DATA CURRENT AS OF: March 03, 2021 04:14:53 PM
 - Based on March 01, 2021 forecast values

Northwestern Rio Grande in Colorado

Forecast Point	50% period	% of max (KAF)	30% avg (KAF)	70% (KAF)	min (KAF)	30-yr (KAF)	avg
Rio Grande at Thirty Mile Bridge (2)	APR-JUL	78	69	112	91	66	50 113
	APR-SEP	87	67	128	103	73	54 129
Rio Grande at Wagon Wheel Gap (2)	APR-SEP	240	71	360	285	198	143
340							
SF Rio Grande at South Fork (2)	APR-SEP	93	73	134	109	78	59 127
Rio Grande nr Del Norte (2)	APR-SEP	365	71	555	435	300	215 515
Saguache Ck nr Saguache (2)	APR-SEP	25	78	42	31	19.3	12.3 32
Alamosa Ck ab Terrace Reservoir	APR-SEP	51	75	74	60	43	32 68
La Jara Ck nr Capulin	MAR-JUL	6.5	73	10.8	8.1	5.1	3.3 8.9
Platoro Reservoir Inflow (2)	APR-JUL	47	84	64	53	41	33 56
	APR-SEP	50	81	69	57	43	34 62
Conejos R nr Mogote (2)	APR-SEP	153	79	220	178	130	100 194
San Antonio R at Ortiz	APR-SEP	6.5	42	12.4	8.7	4.6	2.5 15.6
Los Pinos R nr Ortiz	APR-SEP	48	66	73	57	39	28 73
Rio Grande nr Lobatos Obs	APR-JUL	79	40	165	110	54	25 200

Northeastern Rio Grande in Colorado

Forecast Point	50% period	% of max (KAF)	30% avg (KAF)	70% (KAF)	min (KAF)	30-yr (KAF)	avg
Ute Ck nr Fort Garland	APR-SEP	11.5	90	17.8	13.9	9.3	6.6 12.8
Sangre de Cristo Ck (2)	APR-SEP	13.8	85	24	17.4	10.5	6.6 16.3
Trinchera Ck ab Turners Ranch	APR-SEP	11.2	89	14.9	12.6	9.9	8.1 12.6
Culebra Ck at San Luis (2)	APR-SEP	19.4	84	32	24	15.2	10.0 23
Costilla Reservoir Inflow (2)	MAR-JUL	10.7	96	16.1	12.7	8.8	6.4 11.1
Costilla Ck nr Costilla (2)	MAR-JUL	24	92	39	30	18.7	12.3 26

Middle Sangre Mtns in New Mexico

Forecast Point	50% period	% of max (KAF)	30% avg (KAF)	70% (KAF)	min (KAF)	30-yr (KAF)	avg
Red R bl Fish Hatchery nr Questa	MAR-JUL	25	74	39	30	20	13.9 34
Rio Hondo nr Valdez	MAR-JUL	13.5	73	22	16.8	10.6	6.9 18.4
Rio Lucero nr Arroyo Seco	MAR-JUL	7.4	68	12.8	9.4	5.6	3.5 10.9
Rio Pueblo de Taos nr Taos	MAR-JUL	9.5	56	17.9	12.6	6.8	3.7 17.0
Rio Pueblo de Taos bl Los Cordovas	MAR-JUL	17.0	47	39	25	10.8	4.2 36
Embudo Ck at Dixon	MAR-JUL	22	46	49	32	14.1	5.6 48
Santa Cruz R at Cundiyo	MAR-JUL	7.5	41	13.2	9.6	5.6	3.4 18.3
Nambe Falls Reservoir Inflow (2)	MAR-JUL	2.5	38	4.5	3.3	1.90	1.13 6.5
Tesuque Ck ab diversions	MAR-JUL	0.43	32	1.03	0.64	0.26	0.090 1.34
Santa Fe R nr Santa Fe (2)	MAR-JUL	1.10	26	2.1	1.47	0.78	0.41 4.3

El Vado, Jemez

Forecast Point	50% period	% of max (KAF)	30% avg (KAF)	70% (KAF)	min (KAF)	30-yr (KAF)	avg
El Vado Reservoir Inflow (2)	MAR-JUL	113	50	196	144	86	53 225
	APR-JUL	100	49	179	129	75	44 205
Jemez R nr Jemez	MAR-JUL	14.0	33	26	18.4	10.2	5.8 42
Jemez R bl Jemez Canyon Dam	MAR-JUL	9.0	26	19.4	12.7	5.9	2.6 34

Mainstem Routings

Forecast Point	50% period	% of max (KAF)	30% avg (KAF)	70% (KAF)	min (KAF)	30-yr (KAF)	avg
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Rio Grande at Otowi Bridge (2)	MAR-JUL	390	54	670	495	295	184	720
Rio Grande at San Marcial (2)	MAR-JUL	177	35	505	310	46	-148	510

Pecos

Forecast Point	50% period	% of (KAF)	max avg	30% (KAF)	70% (KAF)	min (KAF)	30-yr (KAF)	avg
Pecos R nr Pecos	MAR-JUL	19.0	33	37	26	13.3	6.7	57
Pecos R nr Anton Chico	MAR-JUL	12.4	20	39	22	5.8	0.59	63
Gallinas Ck nr Montezuma	MAR-JUL	3.0	31	8.8	5.0	1.52	0.24	9.8
Pecos R ab Santa Rosa Lk	MAR-JUL	8.0	14	30	15.2	3.1	0.030	56

Ruidoso and Mimbres

Forecast Point	50% period	% of (KAF)	max avg	30% (KAF)	70% (KAF)	min (KAF)	30-yr (KAF)	avg
Rio Ruidoso at Hollywood	MAR-JUN	1.60	24	4.8	2.7	0.79	0.110	6.7
Mimbres R at Mimbres (3)	MAR-MAY	0.86	57	2.5	1.40	0.48	0.160	1.50

Max (10%), 30%, 50%, 70% and Min (90%) chance that actual volume will exceed forecast.
Averages are for the 1981-2010 period.
All volumes are in thousands of acre-feet.

footnotes:

- 1) Max and Min are 5% and 95% chance that actual volume will exceed forecast
- 2) streamflow is adjusted for upstream storage
- 3) median value used in place of average

City of Santa Fe, New Mexico

memo

DATE: March 31, 2021

TO: River Commission

FROM: Alan G. Hook, Water Resources Coordinator Assistant &
Santa Fe Municipal Watershed Program Manager

Patricio Pacheco, Water Resources Analyst

ITEM / ISSUE: Update for Santa Fe River target flow activity from April 15, 2020 through March 15, 2021; and anticipated planning for the Santa Fe River target flow hydrograph of April 2021 through April 2022.

SANTA FE RIVER TARGET FLOW HYDROGRAPH FOR 2020-2021: The Santa Fe River target flows are administered under the terms of the Santa Fe River Target Flow Administrative Procedures (City Resolution #2012-28). The Santa Fe River Target Flow Ordinance (Ordinance #2012-10) provides up to 1,000 acre-feet of bypass flows to the Santa Fe River downstream of Nichols Reservoir. In years when the Natural Resources Conservation Service (NRCS) forecast for the runoff from mountain snows falls below 75% of the annual average, Santa Fe River target flows are scaled downward. This past target year, the April 1st forecast was 71% of the thirty-year average streamflow yield for the Santa Fe River; therefore, the Santa Fe River target flows were projected to be 710 acre-feet (see Attachment 1: 2020-2021 Santa Fe River Target Flow Hydrograph).

It is important to note that the other determinant of Santa Fe River bypass flows administered through the Santa Fe River target flow program is the concept of the bypass constraint. The administrative procedures for the program define the bypass constraint as follows:

“Bypass constraint”: an operation principle that requires the rate at which water is passed through the outlet works of Nichols Reservoir dam is always equal or less than the stream inflow at the ‘above McClure’ gage.

In other words, at any given time, the volume of Nichols Reservoir outflow administered for the Santa Fe River target flows is not allowed to exceed the volume of inflow at the City’s upper reservoir, McClure Reservoir.

The purposes of the target flows are to help support the Santa Fe River’s green corridor of trees, grasses, and other plants; to support healthy wildlife habitat; and to add to the beauty of free-flowing water to the parklands along the Santa Fe River. Other benefits of maintaining a vegetated, green river corridor include shading and cooling of the urban environment; supporting plants that convert carbon dioxide into oxygen; helping to clean stormwater runoff; and controlling erosion. The target flow hydrograph has also been administered to provide flows that support community events, scheduled along the Santa Fe River as provided for in the Santa Fe River Target Flow Ordinance. In spring of 2020, riparian pulses of increased bypass flows below Nichols Reservoir were coordinated with City of Santa Fe Water to provide recently planted vegetation and channel construction along the Santa Fe River higher surface flows for beneficial use. This was coordinated given the planned

'summer pulse' target flow could not be achieved because of the anticipated end of June/beginning of July bypass constraint.

THE UPCOMING SANTA FE RIVER TARGET FLOW YEAR APRIL 15, 2021 THRU APRIL 14, 2022 (THE YEAR AHEAD):

The Natural Resources Conservation Service (NRCS) forecast for this year's streamflow runoff, as of March 1st (see Attachment 2: NRCS Rio Grande Basin Water Supply Forecast), for the upper Santa Fe River will be equal to or less than 21% of the thirty-year average streamflow yield; therefore, the Santa Fe River target flows will likely be a critical-dry hydrograph of 300 acre-feet for the 2021-22 Santa Fe River target flow year (see Attachment 3: Santa Fe River Target Hydrograph of 300 acre-feet).

A number of considerations will determine the nature of the Santa Fe River Target Flow Hydrograph (for both the timing and volume of the flows) that need to be developed, in coordination with the River Commission, for this year's Santa Fe River target flows. Due to the fact that this is a critical-dry year and anticipated construction at Nichols Dam, the most notable changes are the following: 1) as construction begins in October, 2021 at Nichols Dam, bypass flows may be suspended for an extended period; 2) as called out in the administrative procedures the Annual Childrens' Fishing Derby will be suspended; and 3) due to low storage volumes in McClure Reservoir combined with severe drought conditions and forecasted low Santa Fe River streamflows above McClure Reservoir, the City of Santa Fe Water Division Director *may* adjust target flows to the river during a water emergency. See Section 4.8 Emergencies and Flow Adjustment of the Administrative Procedures for Santa Fe River Target Flows:

To help prevent an interruption in water service and to protect public health and safety, target flows to the river may be adjusted during a water emergency. If the operational water system supply as determined by the water division director's sole discretion, equals between eighty percent (80%) and ninety-nine percent (99%) of operational water system demand, the city manager may declare a "Water Warning - Orange" water emergency implementation stage. Chapter 25-5, Exhibit C (Amended: November 30, 2011 by Ord. No. 2011-38) states that under "Water Warning – Orange" water emergency implementation stage, target flows to the Santa Fe River may be suspended.

Attachment 1: 2020-2021 Santa Fe River Target Hydrograph of 710 acre-feet with measured flows below Nichols Reservoir.

Attachment 2: Natural Resource Conservation Service, Rio Grande Basin Water Supply Forecast March 1, 2021.

Attachment 3: 2018 Example of Santa Fe River Target Hydrograph of 300 acre-feet of planned bypass flows.

Attachment 4: Resolution 2012-28 Exhibit A_ Administrative Procedures for SF River Target Flows

Attachment 5: Ordinance #2012-10.

CITY OF SANTA FE

**ADMINISTRATIVE PROCEDURES FOR
SANTA FE RIVER TARGET FLOWS**

Adopted by: Resolution No. 2012-28
Date Adopted: February 29, 2012

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Article I: Introduction

These administrative procedures describe how City staff will implement Section 25-13 SFCC 1987 to provide 1,000 AFY in target flows to the Santa Fe River.

As the City of Santa Fe has worked in recent years to further diversify its water supply portfolio, it has also worked on a range of initiatives to make substantial improvements along the Santa Fe River and within the river's broader watershed. These improvements have included forest management practices in the upper watershed; riparian rehabilitation projects along the entire river corridor; a variety of erosion control and storm water management projects; construction of significant new reaches of the Santa Fe River Trail; and enhancements within the City's parklands along the river's banks. Consistent with these efforts to protect the City's water supply, improve the drainage and hydrologic functions of the river system, support greenery, shade and wildlife habitat, and to beautify the corridor with aesthetic enhancements, the City also seeks to increase water flows in the river below the City's reservoirs.

A commitment to manage water resources in ways that allow for a programmatic approach to provide for water flows in the Santa Fe River is consistent with the City's Long Range Water Supply Plan (LRWSP). The LRWSP states that, "The City will provide water to maintain a living Santa Fe River, except under drought or emergency conditions." Further, the Plan states, "After the BDD (the Buckman Direct Diversion facility) is online in 2011 and barring legal restrictions, the City will, in accordance with public input, initially release approximately 1,000 AFY [acre feet per year] of water from the Santa Fe River canyon reservoirs to the Santa Fe River, except under drought or emergency conditions."

Following successful river flow programs that were implemented during 2009, 2010 and 2011, the City now seeks to formalize its commitment to provide for river flows in the Santa Fe River in future years. These Administrative Procedures, along with enabling legislation (City ordinance and resolution), establish an approach to codify and give guidance for the City's river flow commitment.

Prior year flows administered for the Santa Fe River yielded valuable information regarding the management of flow regimes; resulted in positive impacts within the riparian corridor; and were extremely popular with people who visited the river, experienced water flowing through the City, and sat or played along the river's banks. These Administrative Procedures address issues such as ideal and contingent flow scenarios; flow volume accounting procedures; adjustments to flow scenarios due to water surpluses or shortages; and other operational details.

Article II: Title, Authority, Applicability, Purpose & Interpretation

- 2.1 **Title.** Administrative Procedures for Target Flows in the Santa Fe River shall be cited and referred to herein as the "Administrative Procedures."
- 2.2 **Authority.** Administrative Procedures for Target Flows in the Santa Fe River are adopted pursuant to the Santa Fe River Target Flow Ordinance, Article 25-13 SFCC 1987 and Resolution No. 2012-____.
- 2.3 **Applicability.** Pursuant to the Santa Fe River Target Flow Ordinance, these Administrative Procedures apply to target flows on or after February 29, 2012, the date of adoption of the Santa Fe River Target Flow Ordinance.

2.4 **Purpose.**

Ord. No. 2012-10 directs the City of Santa Fe to bypass flow to the Santa Fe River downstream of Nichols Reservoir. These administrative procedures describe the means and methods by which the flows will be administered, monitored, measured, adapted to variable conditions and reported in order to ensure that the objectives for the flows are met to the greatest extent possible.

2.5 **Interpretation.**

These Administrative Procedures shall be liberally interpreted to accomplish the purposes set forth in Article 25-13. To the extent of ambiguity, omission or clear error in these Administrative Procedures, City staff and the flow manager shall have authority to interpret and clarify any such matter during implementation of these regulations and procedure so as to effectuate the intent of Article 25-13.

Article III - Definitions of Terms and Phrases

Defined Terms and Phrases. The following defined terms and phrases shall apply to the Administrative Procedures.

1. **"above McClure gage"**: the stream gaging station 08315480 (or 08315479 for low flows) located above McClure Reservoir; this is the measuring point for flows entering McClure Reservoir.
2. **"acre-foot (af)"**: a quantity or unit of water that is equal to the amount of water required to fill an area of 1 acre with 12 inches (i.e., 1 foot) of water; one acre-foot is equal to 325,851 gallons.
3. **"actual daily flow"**: the daily rate of stream flow at the below Nichols gage as recorded by the flow operator.
4. **"annual target"**: the quantity of water in af to be bypassed to the river based upon anticipated watershed yield, within the target year.
5. **"anticipated watershed yield"**: the expected annual yield of water to the Santa Fe River and the municipal reservoirs within the Santa Fe River upper watershed, expressed as the percentage of the historical average; the anticipated watershed yield is estimated as of April 15th using the best available information including the amount of snow, both as depth (in inches) and snow-to water equivalent (in inches) at the weather stations in the upper watershed (Santa Fe and Elk Cabin); the Santa Fe Basin forecast predictions from Natural Resource Conservation Service (NRCS); weather forecast from the National Weather Service and NOAA; and any other pertinent appropriate weather-related information.
6. **"below Nichols gage"**: the stream gaging station 08316505 located below Nichols Reservoir, or at a comparable location of measurement at or below the outlet from Nichols Dam; this is the measuring point for target flows administration under these Administrative Procedures.
7. **"Buckman Direct Diversion Project (BDD)"**: a water supply project that provides water supply to the region using the San Juan Chama Project water and Rio Grande surface waters; the project began producing water in January of 2011 and is expected to be fully operational by July of 2011.
8. **"bypass constraint"**: an operating principle that requires the rate at which water is passed through the outlet works of Nichols Reservoir dam is always equal or less than the stream inflow at the 'above McClure' gage.
9. **"bypass flows"**: generally, water that flows past a diversion or storage facility. In these Administrative Procedures, it refers to water that the City chooses not to store in the municipal reservoirs and thus allows to flow to the Santa Fe River below Nichols Reservoir

- provided that the rate at which the bypass flow is passed through the outlet works of Nichols Reservoir dam is always equal to or less than the stream inflow at the 'above McClure' gage.
10. **"critical-dry year"**: a year in which the anticipated watershed yield is less than 30% of the historical average watershed yield.
 11. **"critical-dry year hydrograph"**: the graphical representation of the desired target flows in critically dry years in which the annual discharge is 300 afy.
 12. **"cubic feet per second (cfs)"**: a *rate* of water flow; one cubic feet per second equals two acre-feet per day and 0.65 million gallons per day
 13. **"daily target flow"**: the desired daily stream flow at the below Nichols gage.
 14. **"dry year"**: a year in which the anticipated watershed yield is between 30% and 75% of the historical average watershed yield.
 15. **"dry year hydrograph"**: the graphical representation of the desired target flows in dry years in which annual discharge is scaled down from 1000afy (to between 300 and 700 afy) based on decreased, anticipated watershed yield.
 16. **"flow manager"**: a member of City of Santa Fe staff responsible for managing releases of water to the River, record-keeping, reporting, and determining changes to daily target flows as prudent under adaptive management; the flow manager is the River and Watershed Coordinator, unless otherwise designated by the City Manager.
 17. **"flow operator"**: a water Division staff member responsible for making water utility system adjustments to meet the daily target flow and for measuring and recording the actual stream flow.
 18. **"historical average watershed yield"**: the average of annual yield of stream flow in the Santa Fe River within the Santa Fe River upper watershed as determined by stream flow measurements at USGS gage 08316000 (Santa Fe near Santa Fe) and USGS gage 08315479 and 08315480 (18-inch and 8-foot above McClure Reservoir, respectively); between 1914 to 2007 the average annual yield measured at Santa Fe near Santa Fe gage was 4,909 af.
 19. **"hydrograph"**: a graphic representation of the variation in stream discharge, in cubic feet per second, plotted against time.
 20. **"municipal reservoirs"**: the reservoirs on the Santa Fe River in the upper watershed - Nichols and McClure with 684 and 3,256 acre-feet of capacity, respectively.
 21. **"natural hydrograph"**: the graphical representation of stream flow as it varies over time in response to climatic (snow melt, precipitation) and man-made (storage, urban storm flow runoff) conditions. The natural hydrograph herein refers to the condition prior to the addition of the target flows governed by these Administrative Procedures, as measured on the Santa Fe River at the existing stream gage locations.
 22. **"public process"**: the public engagement and community outreach process through which the objectives for river flows were developed. From December 2010 through February 2011 input was gathered through conversations with over thirty stakeholders (including many River Commissioners) and two community meetings with over ninety, culturally and generationally diverse participants.
 23. **"river"**: The Santa Fe River reach that begins below Nichols Reservoir
 24. **"release flows"**: the flows from the outlet works of Nichols Reservoir that are discharged from Nichols dam in order to manage flood or potential flood flows.
 25. **"spills"**: flows from Nichols Reservoir that are discharged over the Nichols dam spillway when the reservoir is full.
 26. **"target flows"**: the daily, seasonal or annual amount of water (as a volume or a rate) desired in the river as measured at the below Nichols stream gage. The quantity is variably identified in various sections of the Administrative Procedures depending upon the anticipated watershed yield.
 27. **"target hydrograph"**: means the graphical representation of the daily target flow

necessary to provide up to 1,000 acre-feet of water in the Santa Fe River as measured at the below Nichols gage. The quantity of water is variably identified in several sections of the Administrative Procedures for Target Flows in the Santa Fe River depending upon anticipated watershed yield.

28. **“target year”**: the period beginning April 15th and continuing through April 14th the following year; this definition allows the flow manager to adjust the target flows as necessary according to anticipated watershed yield from the mountain snow pack.
29. **“upper river”**: the reach in the river for which target flows are maintained year-round to support all aspects of a healthy riverine and riparian ecosystem; at a minimum as far as Two-Mile Pond, and ideally, as far as the head gate for the Acequia Madre.
30. **“water service”**: water provided to a customer through the municipal water utility system.
31. **“water service emergency”**: a situation that would cause an interruption in the Water Division’s ability to provide water service or that threatens public health and safety.
32. **“water system”**: the water utility system owned and operated by the City, and includes without limitation all the physical plant, wells, pumps, transmission and distribution facilities, water treatment facilities, storage facilities and all water rights and rights to water owned by the City for use in its water utility.

Article IV – Administrative Procedures

4.1 Objectives

4.1.1 Target Flow Objectives

- a) Create an ecologically healthy vegetative corridor
- b) Benefit the entire community with flows (e.g., equity)
- c) Nurture a beautiful, natural urban greenspace with water in an arid environment
- d) Provide an educational resource for schools and steward the resource for the community

4.1.2 Adaptive Management to Address Objectives and Purpose

The hydrographs presented in these Administrative Procedures provide guidance, or examples, for the administration of flows in a manner that meets the objectives and purpose of the target flows. Actual flows may be adjusted in response to watershed yield forecasts, evolving seasonal conditions and/or feedback from monitoring. When changes to daily target flows are necessary or merited (i.e., adaptive management), the flow manager and/or flow operator shall take into consideration the objectives identified above and the purpose identified for the various components of the hydrographs.

4.2 Target Hydrograph and Target Flow Seasons

4.2.1 Target Hydrograph and Target Flows

The target hydrograph (Figure 1) contains stream flow targets in cfs and af and a schedule for increasing and decreasing flows. The total volume of the target hydrograph is 1,000 afy. The target hydrograph will be adjusted in dry and critical-dry years to conform with the dry year hydrographs and critical-dry year hydrograph as described in Section 3. The schedule is approximate and subject to modification under the guidelines in the Article 4.11: Adaptive Management.

The target hydrograph includes the following aspirational goals:

- **Low Flows for the Upper River.** Flows are 0.3 cfs during the colder season from mid-

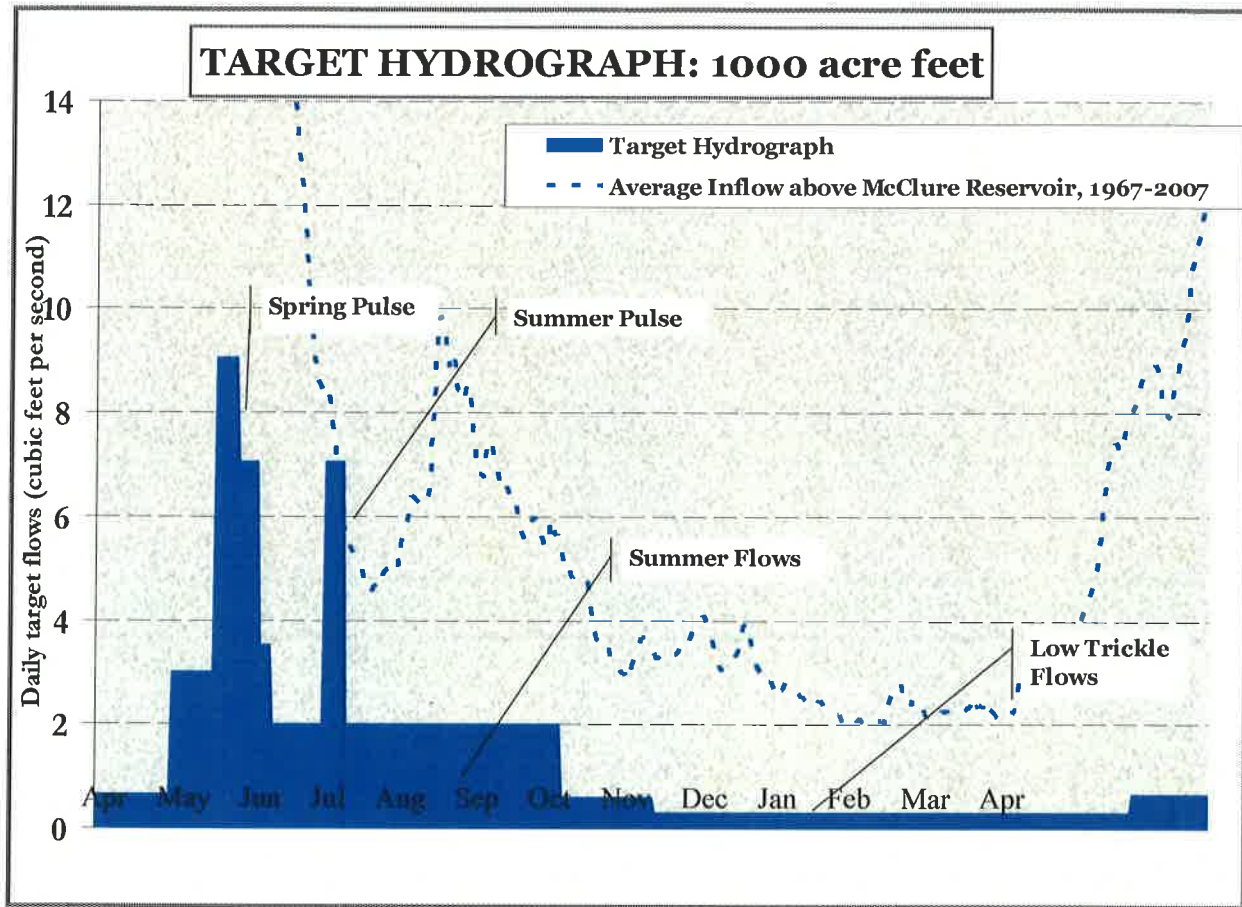
October to mid-March when vegetation is dormant. Flows increase to 0.6 cfs from mid-March to early May and from mid-September to mid-October. The purpose of the mid-September to early May flows is to provide for flows in the upper river to:

- support plant life with irrigation and maximize riverine and riparian ecological health;
 - recharge ground water, subsurface flows and bank storage during periods of plant dormancy to increase availability of water in the warmer months;
 - maintain a wet environment to support the life cycles of macroinvertebrates;
 - recharge local groundwater and sub-surface flows;
 - ensure a wetted river bed so that spring and summer flows will travel farther and more efficiently along the river course.
- **Spring Pulse.** Flows are 3 cfs for two weeks beginning in early May, then increase to 9 cfs for a week following, and then drop to 7 cfs for a week in early June. The purpose of the spring pulse is to provide as much water to the river reach (including San Ysidro crossing and the intersection with Route 599) as feasible. The timing and magnitude of the spring pulse is designed to provide necessary flows through downtown for the Fishing Derby and River Festival and for the blessing of the river in the village of Agua Fria around the day of San Ysidro, patron of the crops. The purpose of the spring pulse is to:
 - mimic natural spring runoff that is provided by the melting of accumulated winter snows;
 - irrigate the trees and other vegetation along the river corridor to support the typical spring time activities within tree/plant (and faunal) annual life cycles as plants are beginning to draw water, beginning to produce buds and leaves;
 - extend surface water flows as far as possible with the objective of reaching beyond the San Ysidro crossing down to the City's Waste Water Treatment Plant;
 - recharge local groundwater and sub-surface flows;
 - continue the process of ground water recharge that will benefit plant life into the summer months.
 - **Summer Flows.** Flows are an average of 2 cfs from mid-June to mid-September. The flow manager may increase or decrease the flow rates to meet flow objectives, with particular regard for major events in Santa Fe, provided that the average is maintained and flows are not reduced below .3 cfs.

The purpose of the summer flows is to:

 - provide flows through downtown, and the Santa Fe River Park, for aesthetic and social benefit;
 - supply irrigation to enhance the river's function as an appealing urban greenbelt;
 - recharge local groundwater and sub-surface flows;
 - maintain the wetted river bed so that flows from rainfall events will travel downstream farther and more efficiently.
 - **Summer Pulse.** Flows are 7 cfs for one week in early July. The purpose of the summer pulse is to:
 - push flows once again downstream to San Ysidro Crossing and the river's intersection with Route 599 during the hot and dry periods in advance of the summer monsoon rains;
 - sustain vegetation during the hottest time of year, with moisture for new/germinating seedlings, and ultimately enhancing the river corridor as an appealing urban greenbelt;
 - provide flows for river bank irrigation and wetting of the river bed in the period between spring runoff and the likely arrival of monsoon rainfall.

Figure 1



4.3 Dry and Critical-Dry Year Target Flow Reductions

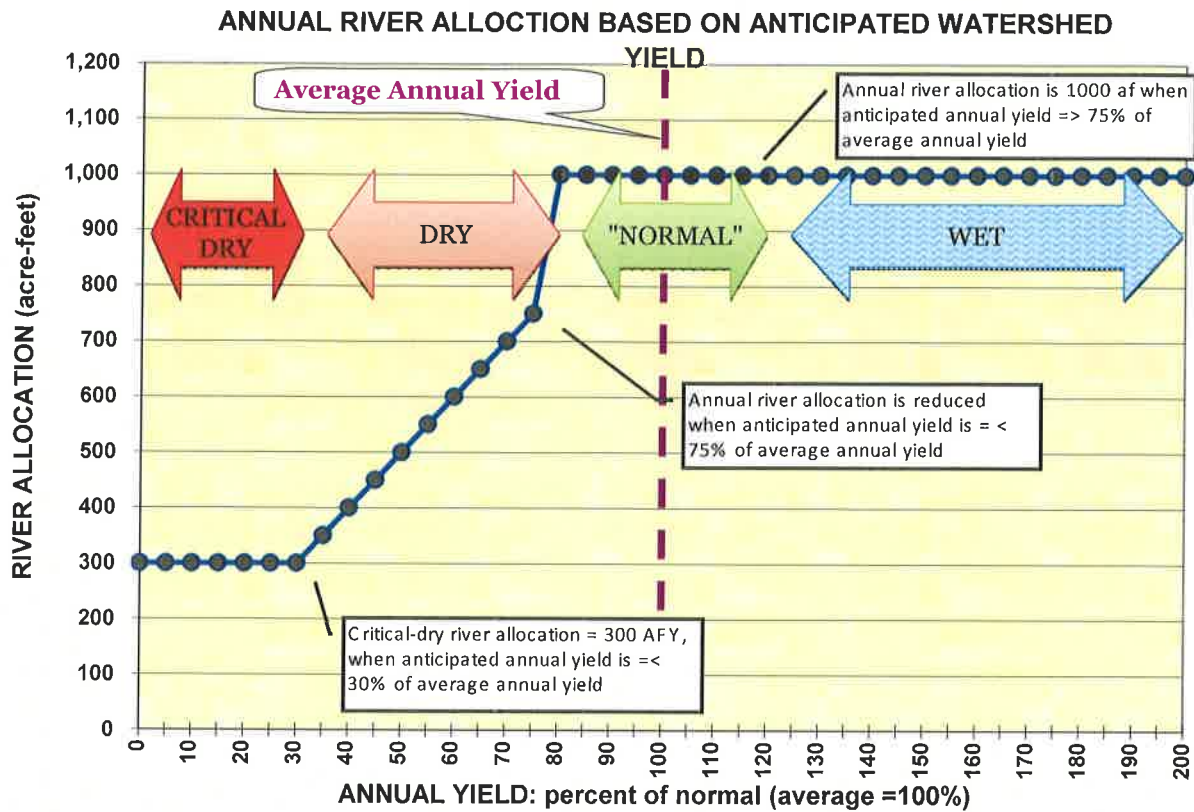
4.3.1 Reduction of Target Flows in Dry and Critically Dry Years

A dry year is defined as a year in which the anticipated watershed yield is equal to or less than 75% but greater than 30% of historical average. A critical-dry year is a year in which the anticipated watershed yield is equal or less than 30% of the historical average. In dry and critical-dry years, the total volume of the target hydrograph (1,000 af) will be reduced, by multiplying 1,000 by the percentage of the anticipated watershed yield:

$$\text{TargetHydrograph} \times \text{AnticipatedWatershedYield}_{\text{yearX}} = \text{target flows}_{\text{yearX}}$$

For example, in a year where the anticipated watershed yield is 65% of average, the target flow for the target year is calculated by 1,000 afy x 65% = 650 af. The reduction calculation is depicted graphically in Figure 2.

Figure 2



4.3.2 Dry Year Hydrographs

In dry years, the flow manager will allot the timing and magnitude of the daily target flows in a manner consistent with the following guidelines:

- (a) reduction in summer flows,
- (b) scaling-down – but not eliminating – the spring pulse and,
- (c) reduction in low flows from 0.30 cfs to 0.15 cfs.

The timing and magnitude of dry year target flows for 700 af, 600 af, 500 af, and 400 af are described in the Dry Year Hydrographs in Appendix A.

While scaling back the quantity of the annual target flow in dry years, the priority is to provide for spring and summer pulses to fulfill the purposes of the pulses as outlined for the 1000 af target flow in section 4.2.1 above.

4.3.3 Critical-Dry Year Hydrograph

In critical-dry years, in which the total target flows equal 300 af per target year, the daily target flows will be managed in a manner consistent with the following guidelines and as illustrated by Figure 3:

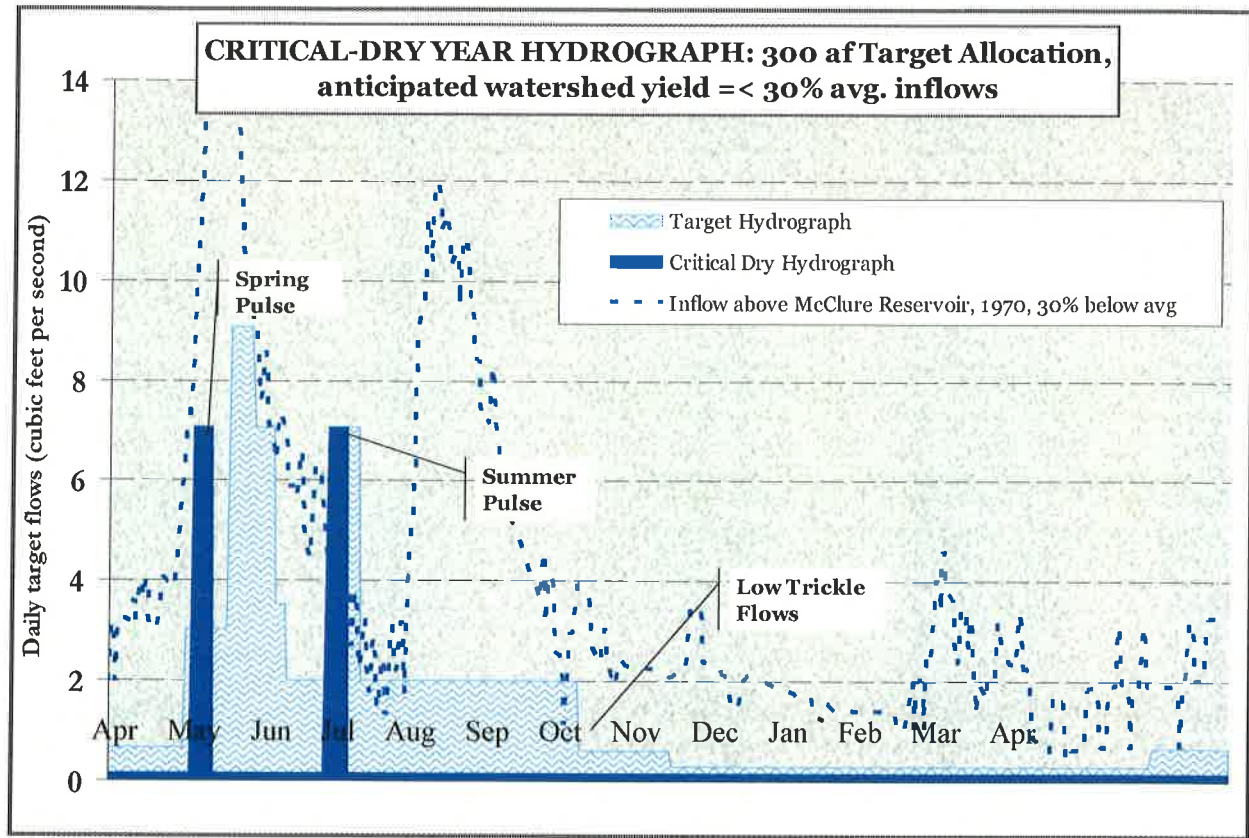
- a) sustained low flows of 0.15 cfs,
- (b) one spring and one summer pulse, each of approximately 100 af.

The schedule of the pulses shall generally follow the timing of the pulses in the target

hydrograph. The magnitude of the pulses shall be approximately 7 cfs, provided that the daily target flows are within the bypass constraint. The river shall retain flows of at least 300 afy barring an emergency or unforeseen infrastructure constraint (e.g., failure of Nichols's Reservoir outfall structure). The purpose of the critically dry year hydrograph is to maintain a wet corridor in the upper river for riverine and riparian ecological benefit while providing two downstream pulses for the purposes of the pulses as outlined for the 1000 afy target flow in section 4.2.1 above.

In critical-dry years, since the daily target flows for the Fishing Derby cannot be reliably met, the Fishing Derby will be suspended.

Figure 3



4.4 Wet Year Flows

During wet years, defined as when the anticipated watershed yield is greater than the historical average, the river will be allocated water according to the target hydrograph (e.g., 1,000 afy) in the target year. In wet years, the actual daily flows will likely be greater because of flow contributions from reservoir flood management, and because of greater flows within the urban watershed. These greater daily flows will meet many of the objectives described in Article 4.1. Furthermore, the irrigation needs of the river corridor will be supplemented by the above-average spring precipitation. By not increasing the target hydrograph in a wet year, in wet years the City may be able to put the full amount of the City's Santa Fe River water rights under License 1677 to beneficial use and thus rest the City's well fields and use of local groundwater resources.

4.5 Management and Accounting of Releases and Spills

4.5.1 Management of Municipal Reservoir Flood Flows

The City manages the municipal reservoirs in part, in a way that protects the river and the urban watershed from floods. Flood management includes both the capture of peak inflows from the upper watershed and the management of release flows and spills from Nichols and McClure Reservoirs.

Pursuant to Article 25-13 SFCC 1987, the flow manager and flow operator are directed to manage, as much as possible, the release of flows and spills in a manner consistent with the target hydrograph and the objectives herein. This includes:

- a) matching the timing and magnitude of the flows,
- b) scaling the additional release flows in a manner which increases the magnitude of the spring pulse
- c) discharging the release flows in a manner to augment the magnitude of the low flow.

4.5.2 Accounting of Releases and Spills vis-à-vis the Target Hydrograph

Water that is released and/or spilled for flood management will count toward the daily target flows and target hydrograph, when the flows are within the daily target flows of the target hydrograph. If water greater than the daily target flows is released or spilled into the river, the quantity of water that exceeds the daily target flow will not be counted toward the 1,000 af of the target year. For example, if the total planned target flow for a period of May 20 to June 3 is 300 af, but necessary reservoir management results in actual flow of 1,000 af, then 300 af shall be counted toward the planned commitment and 700 af shall not be counted, provided that the 300 af met the daily flow targets desired under the target hydrograph.

The purpose of allowing water spilled or released to count toward the 1,000 af target hydrograph is so that the municipal water utility can store excess water in wet years for water supply to compensate for the additional use of groundwater required in critically dry years. The water released or spilled in excess of the target hydrograph and daily target flows cannot be stored and released for the river later in the season because of the water right and storage limitation discussed in the next section.

- 4.5.3 Except as described above in section 4.5.2, the 1000 acre-feet volume of water shall not include water released for any other purpose at the time of release.

4.6 Water Rights

4.6.1 Use of the City's Santa Fe River Water and Storage Rights

The City is not using any of the water rights under License 1677 and Declaration No. 01278 to comply with Article 25-13 SFCC 1987. The City will continue to periodically put all the water rights under License 1677 and Declaration No. 01278 to beneficial use.

4.6.2 Bypass Constraint

In order to assure that the administration of Ord. No. xxxx does not adversely interfere with the storage, diversion and use of water under License 1677 and Declaration No. 01278, the flow manager and flow operator will manage the daily target flows in a manner such that the target flows will not come out of water stored under License 1677 and Declaration No. 01278 in the municipal reservoirs. This means that the City will not discharge water to the river that it has stored. To accommodate this constraint, the flow operator will regulate the daily target flow in a

manner such that discharges from Nichols Reservoir to the river shall not be greater than the daily inflow into McClure Reservoir; hence the flow operator will only bypass water for daily target flows.

4.6.3 **Recognition of Other Surface Water Right Users**

The City recognizes that there are other surface water right holders of Santa Fe River surface water, including those with partially adjudicated rights. Nothing in these Administrative Procedures should be construed to define, manage or be in conflict with the valid rights of other surface water right holders.

4.7 **Management and Operational Procedures**

Management and administration of daily target flows to the river require participation by the flow manager, flow operator, the Water Division director, other Water Division staff, and the River Commission Chair to ensure that flows are released in a timely manner according to the target hydrograph, dry year hydrographs, or the critically dry year hydrograph.

4.7.1 **Flow Management**

The flow manager, in consultation with the Water Division staff, shall be responsible for determining the quantity of water allocated to the target year based on the anticipated watershed yield. The flow manager will also determine the daily target flows of the target hydrograph, or deviations therefrom based on the anticipated watershed yield, by fitting the annual target and associated hydrographs to the upcoming target year. The flow manager will annually present the hydrograph for the upcoming target year to the River Commission at its April meeting for review. The flow manager will provide a copy of the target year hydrograph to the Water Division Director, the Water Division source of supply manager and the Level Four operators at the Canyon Road Water Treatment Plant for implementation.

When necessary, the flow manager may alter the daily flow targets in a manner consistent with the adaptive management objectives described in Section 11. These alterations may incorporate consultation with the River Commission Chair or designee, the flow operator, and the Water Division director. The flow manager will be the city's river and watershed coordinator or another member of city staff designated by the city manager. All adjustments to the daily target flow shall be made via email to the Water Division Director, the Source of Supply Manager, the Canyon Road Water Treatment Plant Level 4 Operators. The River Commission Chair shall be copied (cc:) on all communications directing the adjustment of daily target flows.

4.7.2 **Flow Operations**

The flow operator shall be the Water Division Source of Supply staff person on duty and responsible for controlling the daily release rates. The flow operator will adjust the discharge water from Nichols Reservoir in accordance to the daily target flow, and record the actual daily flow at the below Nichols gage. The flow operator may reduce the daily flow target to match daily inflow at the McClure reservoir, should the daily flow target exceed the daily inflow.

4.7.3 **Flow Adjustment Infrastructure**

The flow operator adjusts the daily target flows for the river by regulating the "splitter box" valve at the Canyon Road Water Treatment Plant control panel, and then sending a system operator to the below Nichols gage to see what effect the adjustment had on the actual instantaneous flow. Because of the cumbersome nature of this procedure, the daily flow targets in these Administrative Procedures are adjusted no more than weekly. Should, in the future, the outlet works be reengineered to be more nimble, and the below Nichols gage provide real time data, the daily target flows may be managed and adjusted more frequently, in particular in response to

climatic conditions.

4.8 Emergencies and Flow Adjustment

To help prevent an interruption in water service and to protect public health and safety, target flows to the river may be adjusted during a water emergency. Upon implementation of a Water Emergency Management Plan, target flows to the Santa Fe River will be adjusted pursuant to Chapter 25-5.6 and Exhibits C (Water Warning Orange) and D (Water Emergency – Red) SFCC 1987.

4.8.1 Water Emergency Implementation Stages

If the operational water system supply as determined by the water division director's sole discretion, equals between eighty percent (80%) and ninety-nine percent (99%) of operational water system demand, the city manager may declare a "Water Warning - Orange" water emergency implementation stage. If the operational water system supply as determined by the water division director's sole discretion, is less than eighty percent (80%) of operational water system demand, the city manager may declare a "Water Emergency - Red" water emergency implementation stage.

Chapter 25-5, Exhibit C (Amended: November 30, 2011 by Ord. No. 2011-38) states that under "Water Warning – Orange" water emergency implementation stage, target flows to the Santa Fe River may be suspended.

Chapter 25-5, Exhibit D (Amended: November 30, 2011 by Ord. No. 2011-38) states that under "Water Emergency – Red" water emergency implementation stage, target flows to the Santa Fe River shall be suspended.

4.9 Monitoring

The City shall monitor the impacts of providing daily target flows to the river, to determine whether the objectives identified in Section 4.1 are being met. Monitoring will provide the feedback necessary for the flow manager to institute adaptive management as identified in Article 4.11; and/or to amend these Administrative Procedures to ensure that the objectives and purposes of the target flows are being met to the fullest extent possible. City staff will coordinate and collaborate with community volunteers, local non-governmental organizations and other agencies to implement a monitoring program.

4.9.1 Stream flow

The City will continue to monitor stream flow (in cfs) at 15 minute increments at the below Nichols gage and the above St. Francis gage. Each of these gages will be calibrated periodically to assure high quality data.

4.9.2 Wetted Distance

The City, in conjunction with community volunteers and cooperating agencies, shall develop a methodology by which the distance the daily target flows have traveled can be measured.

4.9.3 Future Monitoring

The City shall consider additional river monitoring that will assist in adaptive management and in determining appropriate daily target flows in the future. Potential parameters include:

Soil moisture: to understand the water available for riparian vegetation under varying daily target flows, hydrographs, and climatic conditions;

Ecological health indicators: the presence, location, and characteristic of flora and fauna in the river corridor;

Storm flow peak: to understand if or the how the target flows have altered the timing and magnitude of urban storm runoff;

Water quality: to understand if or the how the target flows have altered the water quality in the river;

Surface water infiltration: to understand the temporal and spatial distribution of stream flow loss;

Surface/ groundwater interaction: to understand the fate of stream flow infiltration, and the contribution, if any, of groundwater to surface water.

4.10 Accounting and Reporting

4.10.1 Flow Accounting

The flow manager, with data provided by the Water Division and flow operator, shall account quarterly for the volume of water released per target year at the below Nichols gage using the assumption that all water passing the gage has either been discharged pursuant to Article 25-13 SFCC 1987, spilled or released. The flow manager shall make adjustments as necessary to manage the target year water allocation. The basis of the volumetric accounting will be the official below Nichols gage record, and shall identify the periods of time during which flow estimates were estimated (missing stream flow data results from frozen equipment, battery failure, equipment vandalism, etc). Interim estimates can be made using the actual daily flow as recorded by the flow operator and reported on the daily water report. Released or spilled water shall be accounted as described in Section 5.

4.10.2 Reporting

The City shall endeavor to keep elected officials, the River Commission, the city manager, the Water Division director and the public informed regarding the activities associated with Article 25-13 SFCC 1987. The reports outlined below identify specific reporting recommendations.

Report on Annual Target and Hydrograph for Upcoming Year

After April 15th, the flow manager will report by email to the River Commission, the Water Division director, Public Utilities Committee and the city manager the target year hydrograph based on the anticipated watershed yield. The report shall include the relevant information on which the anticipated watershed yield was based (e.g., NRCS basin forecasts, snow-to-water equivalent from SNOTEL sites in the upper watershed, climate predictions for the National Weather Service and NOAA). The target year hydrograph will be posted on the City's website.

Annual report

At the end of each year, the flow manager shall prepare reports which describe the previous year's activity relevant to Article 25-13 SFCC 1987. For the previous target year the report shall include the daily actual stream flow data (daily mean and cumulative), the annual volume released, and annual flow, a summary of routine or special activities along the river (e.g., Fishing Derby, River Festival) a description and explanation of deviations from the target hydrograph, observations or recommendations related to adaptive management, and an estimate of the amount of groundwater pumped to accommodate the daily target flows. For the current target year, the

report shall include the annual target quantity and the target hydrograph. The flow manager will submit the report to the River Commission, the Public Utilities Committee, the City Council, and post the report to the City's website.

Periodic Actual Stream Flow Report

The flow operator and Water Division staff will record and track actual daily flow at the below Nichols gage in an Excel-compatible spreadsheet. The flow operator shall send the electronic spreadsheet to the flow manager approximately monthly.

Daily Water Report

The flow operator and Water Division staff will report actual daily flow at the below Nichols gage on the Daily Water Report, which is emailed to any interested party and posted on the City's website.

4.11 Adaptive Management

4.11.1 Adaptive Management Goals

The goal of Article 25-13 SFCC 1987 is to provide for flows in the river, while providing the City with flexibility in managing both the water supply system and river flows. The target hydrograph, dry year hydrographs and critically dry year hydrograph are designed to match Article 25-13, and these Administrative Procedures, that the flows to the river be managed in a manner to optimize the benefits of the flows to meet the objectives. Hence, these procedures allow for and encourage adaptive management, provided that the annual target is not impacted.

4.11.2 Adaptive Management Conditions and Considerations

The following conditions and considerations may influence or provide cause for adaptive management:

- a. High flows or flood risk
- b. Timing, intensity and/or scale of monsoon events
- c. Periods of exceptionally dry weather
- d. Scheduled community events
- e. Maintenance/improvement work within the river channel or on water supply infrastructure
- f. Maintaining daily target flows equal or below inflow into McClure Reservoir
- g. Feedback from monitoring data
- h. Change in snowpack or watershed yield conditions (e.g., late snowfall) after the beginning of the flow year

5. Annual Fishing Derby

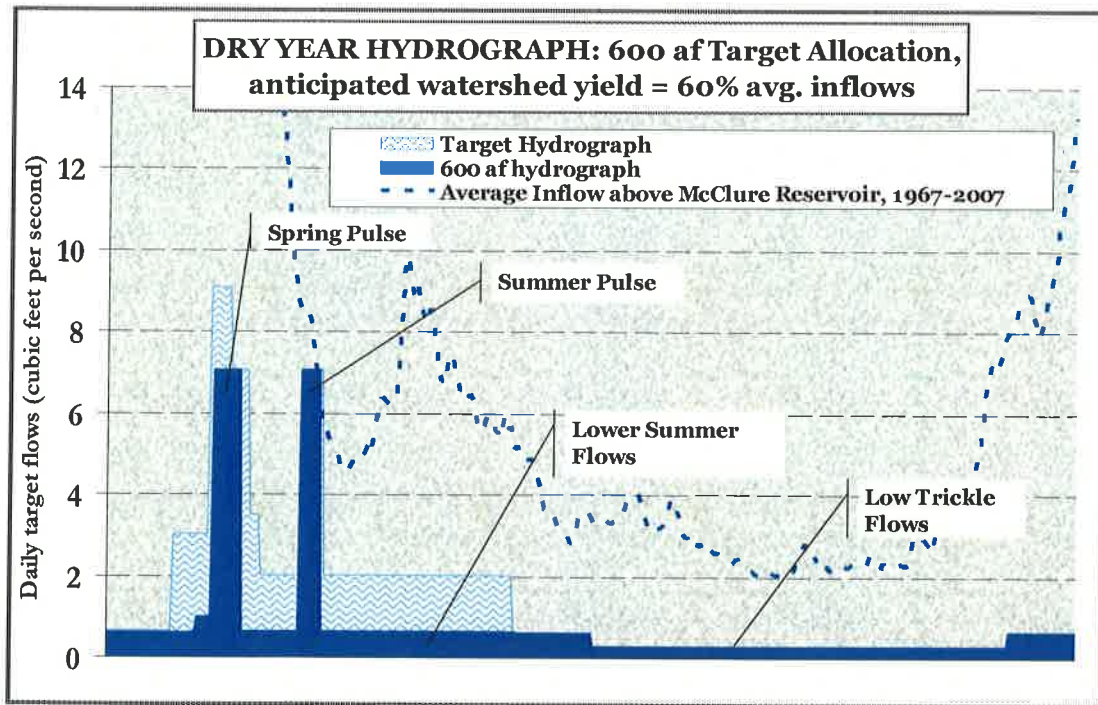
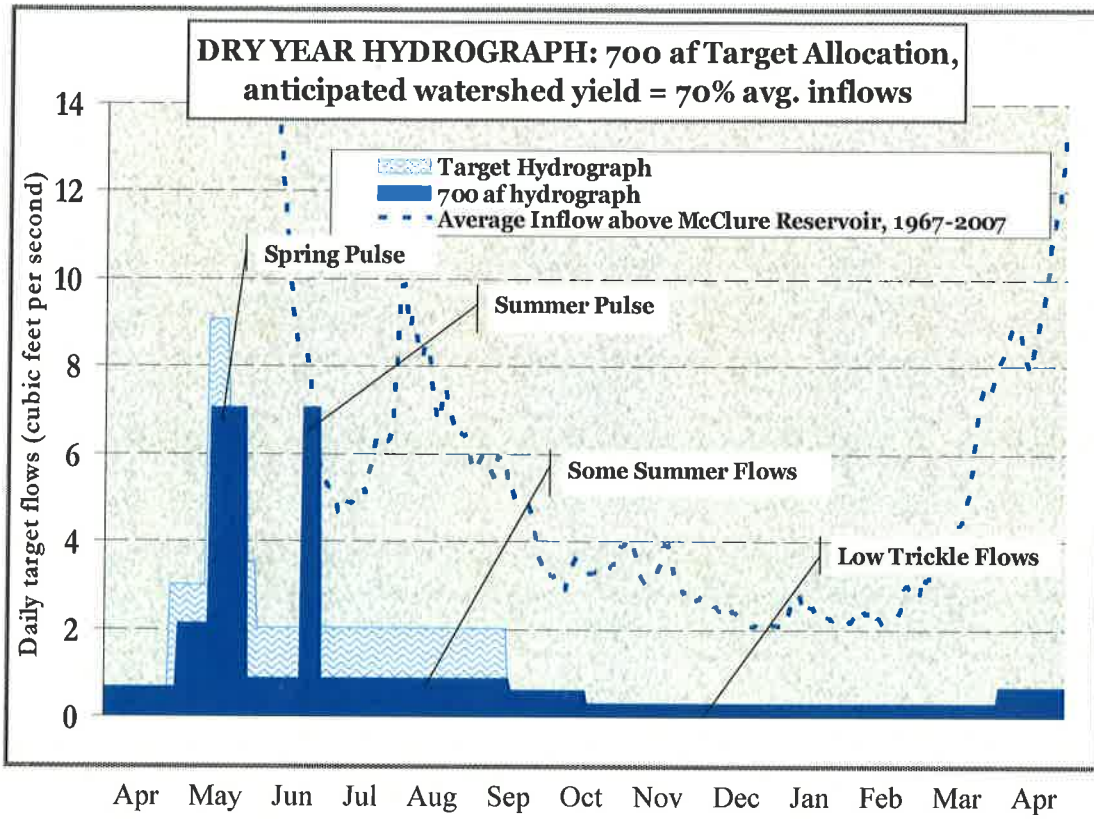
The City of Santa Fe's Annual Fishing Derby takes place each year on the first Saturday in June. The Fishing Derby provides opportunities for children and families to join with neighbors to experience a fun and engaging day by the river, to learn about the Santa Fe River and riparian ecology, and to learn fishing skills.

In dry years when the anticipated watershed yield is less than 50%, or, if for other climatic or hydrologic reasons daily target flows adequate for the Fishing Derby cannot be met, the Fishing Derby will be suspended.

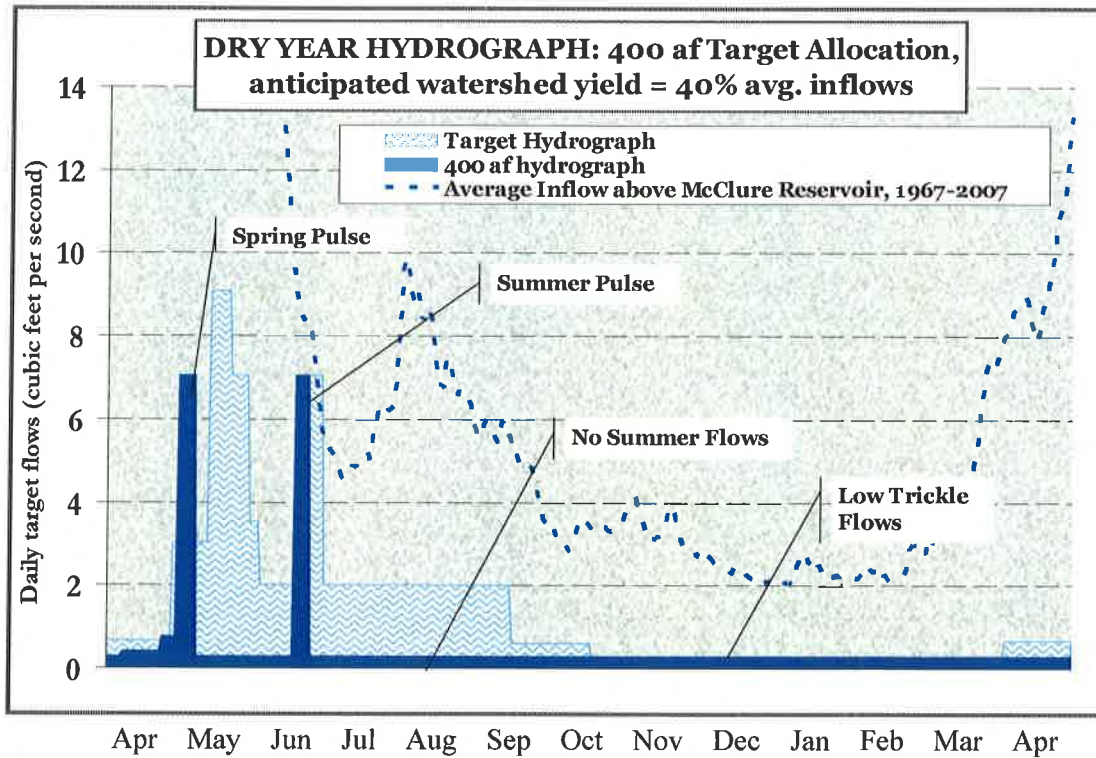
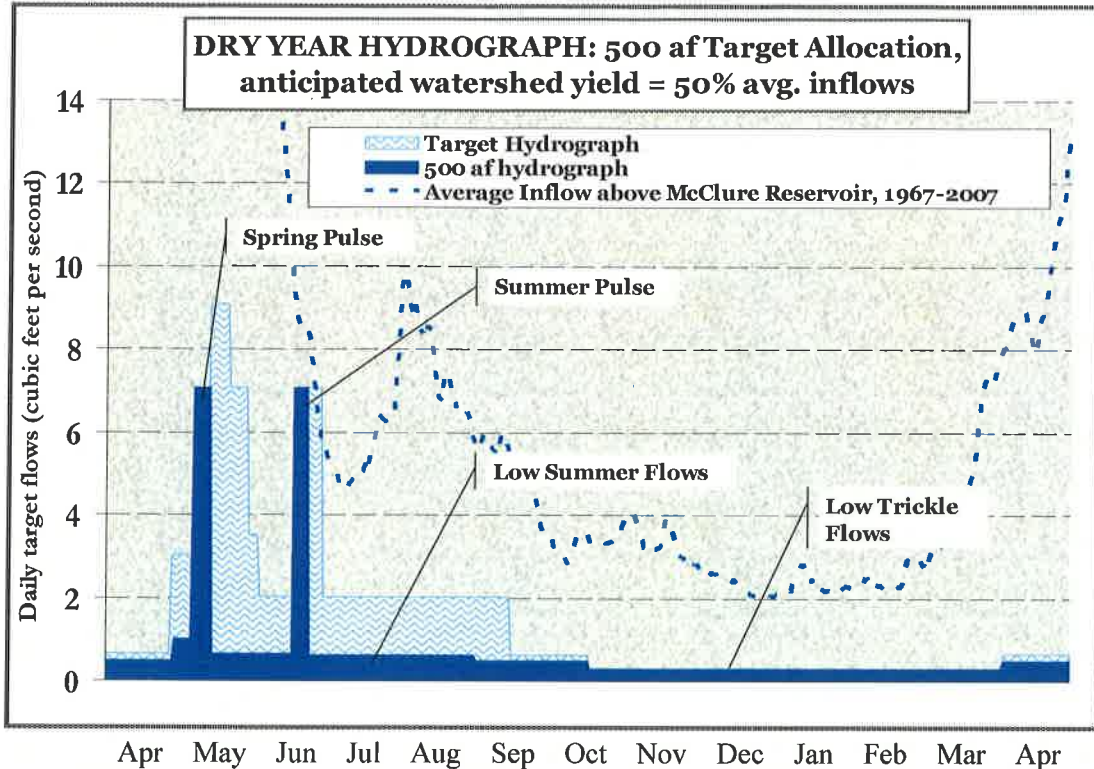
6. Miscellaneous Provisions

- 6.1 **Amendments.** These Administrative Procedures may only be amended pursuant to a duly adopted resolution of the Governing Body.
- 6.2 **Severability.** In the event that a court of competent jurisdiction shall determine that any provision these Procedures are invalid, unlawful or unenforceable, the remainder of these Administrative Procedures shall remain in full force and effect.

Appendix A
Dry Year Hydrographs



Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr



1 CITY OF SANTA FE, NEW MEXICO

2 ORDINANCE NO. 2012-10

3
4
5 AN ORDINANCE

6 CREATING A NEW ARTICLE 25-13 SFCC 1987 REGARDING THE SANTA FE RIVER
7 TARGET FLOW FOR A LIVING RIVER INITIATIVE.

8
9 BE IT ORDAINED BY THE GOVERNING BODY OF THE CITY OF SANTA FE:

10 Section 1. A new Article 25-13 SFCC 1987 is ordained to read:

11 25-13 [NEW MATERIAL] SANTA FE RIVER TARGET FLOW

12 Section 2. A new Section 25-13.1 SFCC 1987 is ordained to read:

13 25-13.1 [NEW MATERIAL] Short Title. Article 25-13 may be cited as the “Santa Fe
14 River Target Flow Ordinance”.

15 Section 3. A new Section 25-13.2 SFCC 1987 is ordained to read:

16 25-13.2 [NEW MATERIAL] Legislative Findings. The governing body finds that:

17 A. Through the adoption of Resolution No. 2009-47, Resolution No. 2010-15 and
18 Resolution No. 2011-28 the governing body authorized the city to support a living Santa Fe River by
19 allowing water to bypass McClure and Nichols reservoirs in 2009, 2010 and 2011.

20 B. The Santa Fe River is an important element of the city of Santa Fe and the city’s
21 origin was due to the existence of the river.

22 C. There is widespread community support for maintaining a living Santa Fe River for
23 recreational and cultural purposes.

24 D. A healthy river provides riparian habitat for wildlife and minimizes erosion and flood
25 damage, removes pollutants from storm water and helps recharge groundwater.

1 E. The city has put to beneficial use its water right under Declaration No. 01278 and
2 License 1677, (as issued by the state engineer) and intends to continue to put that water to beneficial
3 use, and the adoption of this Ordinance will not adversely affect the city's water right under
4 Declaration No. 01278 and License 1677.

5 F. Implementation of this Ordinance will not cause the city to operate the municipal water
6 utility in any way that is inconsistent with any local, state or federal rules, regulations or laws.

7 **Section 4. A new Section 25-13.3 SFCC 1987 is ordained to read:**

8 **25-13.3 [NEW MATERIAL] Purpose.** The purpose of Article 25-13 SFCC 1987 is to
9 formalize the city's commitment to provide for a target flow within the Santa Fe River in order to
10 enhance and further the objective of restoring the Santa Fe River as a living river by committing to
11 use up to 1,000 acre-feet per year (AFY) of the city's water supply, depending upon hydrologic
12 conditions in the Santa Fe River watershed. This Ordinance shall be interpreted to further this
13 objective.

14 **Section 5. A new Section 25-13.4 SFCC 1987 is ordained to read:**

15 **25-13.4 [NEW MATERIAL] Definitions.** As used in Article 25-13 SFCC 1987:

16 *Administrative procedures* means the *Administrative Procedures for the Santa Fe River*
17 *Target Flows Ordinance*, adopted by resolution of the governing body, that describe how city staff
18 will implement Article 25-13 SFCC 1987 in order to provide up to 1,000 AFY in target flows to the
19 Santa Fe River. The administrative procedures shall include the following:

20 A. The operations of the city's water division and other city staff necessary to provide
21 for the up to 1,000 acre-feet target flow below Nichols Reservoir;

22 B. Target flow hydrographs that support the city's identified ecological and social
23 outcomes;

24 C. Adjustments to the target flows and target hydrograph under less than average
25 anticipated watershed yield;

- 1 D. Provisions to adaptively manage the target flows based on ecological and social
2 outcomes because of precipitation events, stream flows and effects;
- 3 E. Adjustments to the target flow due to emergencies;
- 4 F. Requirements for monitoring, accounting, and reporting target flow; and
- 5 G. Other operational and administrative procedures that may be required to fulfill the
6 purpose of this Ordinance.

7 *Anticipated watershed yield* means the expected annual yield of water to the Santa Fe
8 River and the municipal reservoirs within the Santa Fe River upper watershed, expressed as
9 the percentage of the historical average; the anticipated watershed yield is estimated as of
10 April 15th using the best available information including the amount of snow, both as depth
11 (in inches) and snow-to water equivalent (in inches) at the weather stations in the upper
12 watershed (Santa Fe and Elk Cabin); the Santa Fe Basin forecast predictions from Natural
13 Resource Conservation Service (NRCS); weather forecast from the National Weather Service
14 and NOAA; and any other pertinent appropriate weather-related information.

15 *Below Nichols gage* means the stream gaging station 08316505 located below
16 Nichols Reservoir, or at a comparable location of measurement at or below the outlet from
17 Nichols Dam; this is the measuring point for target flows administration pursuant to the
18 administrative procedures.

19 *Bypass flow* means, generally, water that flows past a diversion or storage facility. In the
20 administrative procedures, it refers to water that the city chooses not to store in the municipal
21 reservoirs and thus allows to flow to the Santa Fe River below Nichols Reservoir provided that the
22 rate at which the bypass flow is passed through the outlet works of Nichols Reservoir dam is always
23 equal or less than the stream inflow at the ‘above McClure’ gage.

24 *Hydrograph* means a graphic representation of stream discharge, in cubic feet per second,
25 plotted against time.

1 *Target flow* means the daily, seasonal or annual amount of water (as a volume or a rate)
2 desired in the river as measured at the “below Nichols” stream gage or at a comparable location of
3 measurement at or below the outlet from Nichols Dam. The quantity is variably identified in several
4 sections of the administrative procedures, depending upon the anticipated watershed yield.

5 *Target hydrograph* means the graphical representation of the daily target flow necessary to
6 provide up to 1,000 AFY of bypass water in the Santa Fe River as measured at the below Nichols
7 gage. The quantity of water is variably identified in several sections of the administrative procedures,
8 depending upon anticipated watershed yield.

9 **Section 6. A new Section 25-13.5 SFCC 1987 is ordained to read:**

10 **25-13.5 [NEW MATERIAL] Santa Fe River Target Flow.** The city water division shall
11 operate the city's system of reservoirs to ensure that a bypass target flow of up to 1,000 AFY of river
12 water flows into the Santa Fe River below Nichols Reservoir. In average and wet conditions, the
13 target flows will be 1,000 AFY. In drier years, seventy-five (75%) of the average watershed yield or
14 less, the target flows shall be scaled in such a way that the target flows will equal the percentage
15 anticipated watershed yield multiplied by 1,000 AFY. When the anticipated watershed yield is equal
16 or less than thirty percent (30%) average watershed yield, the target flows will be 300 AFY.
17 Additional information regarding the daily target flow pattern is provided for in the administrative
18 procedures. Water that is released and/or spilled for flood management will count toward the daily
19 target flows and target hydrograph when the flows are within the daily target flows of the target
20 hydrograph. If water greater than the daily target flows is released or spilled into the river, the
21 quantity of water that exceeds the daily bypass target flow will not be counted toward the target
22 hydrograph. Except for flood management as described above, the water for the target hydrograph
23 shall not include water released for any other purpose at the time of release, provided that nothing in
24 this Article shall require the release of bypass water if the release might jeopardize the city's water
25 right under License 1677 and Declaration 01728.

1 **Section 7. A new Section 25-13.6 SFCC 1987 is ordained to read:**

2 **25-13.6 [NEW MATERIAL] Coordination with Santa Fe River Community Events.**

3 When possible, target flows and target hydrographs shall be patterned to support community events
4 scheduled along the Santa Fe River.

5 **Section 8. A new Section 25-13.7 is ordained to read:**

6 **25-13.7 [NEW MATERIAL] Water Emergency Target Flow Adjustment.**

7 A. Pursuant to Section 25-5.6 SFCC 1987, upon declaration of a water emergency, the
8 city manager is authorized to adjust target flows to the Santa Fe River.

9 (1) For the "Water Warning – Orange" implementation stage, target flows to the
10 Santa Fe River may be suspended.

11 (2) For the “Water Emergency – Red” implementation stage, target flows to the
12 Santa Fe River shall be suspended.

13 B. The administrative procedures provide the detailed process for adjusting target flows
14 to the Santa Fe River during a declared water emergency.

15 **Section 9. A new Section 25-13.8 is ordained to read:**

16 **25-13.8 [NEW MATERIAL] Reporting and Review.** Annually city staff shall provide a
17 report to the governing body summarizing the previous year’s target flows and projection for the next
18 year’s target flows. The annual report shall provide the governing body the opportunity to review this
19 Ordinance. Additional information regarding accounting and reporting is provided for in the
20 administrative procedures.

21 **Section 10. A new Section 25-13.9 is ordained to read:**

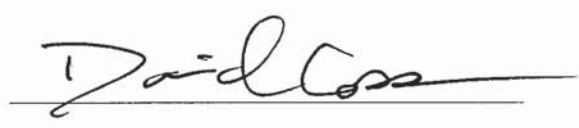
22 **25-13.9 [NEW MATERIAL] Effective Date.** This ordinance shall become effective five
23 days after publication of adoption.

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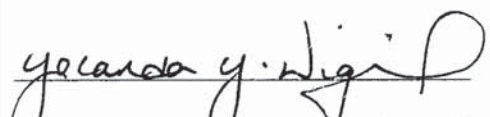
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PASSED, APPROVED, and ADOPTED this 29th day of February, 2012.

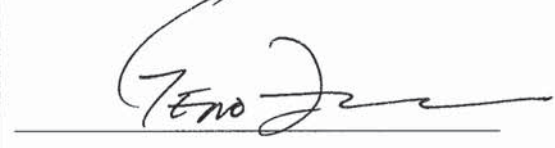


DAVID COSS, MAYOR

ATTEST:


VOLANDA Y. VIGIL, CITY CLERK

APPROVED AS TO FORM:



GENO ZAMORA, CITY ATTORNEY

Stormwater Survey 2021

1. Based on your current knowledge, do you think the overall water quality of the Santa Fe River, Arroyos, Acequias in the City is:
 - a. Poor
 - b. Fair
 - c. Good
 - d. Excellent

2. From the list below, what do you believe to be the primary source of water pollution in the Santa Fe River and contributing arroyos?
 - a. Litter/Trash
 - b. Industrial Waste
 - c. Sewage/Wastewater
 - d. Stormwater
 - e. Dog/Pet Waste
 - f. Green waster such as yard or lawn clippings
 - g. Household chemicals and pharmaceuticals

3. Have you heard of the term stormwater? If so, what does the term mean to you?
 - a. Water that runs overland from rain, storms, snowmelt and runoff
 - b. Water that does not absorb into the ground
 - c. Rain water carried through ditches and arroyos
 - d. Water from streets, parking lots and roof tops
 - e. I have not heard of the term stormwater

4. Stormwater refers to surface rainwater that is carried through drains located in City streets as well as water that collects in, and travels through, arroyos and ditches. Which one of the following do you believe happens to local stormwater?
 - a. Flows directly into the Santa Fe River
 - b. Flows into treatment centers to be cleaned and then released back into the environment as surface water
 - c. Flows into treatment centers to be cleaned and then released back into the environment as groundwater
 - d. Some water enters a treatment center for cleaning and some flows directly to the Santa Fe River
 - e. I don't know what happens to stormwater after in enters a drain or arroyo

5. Do you recall seeing or hearing any ads sponsored by the City of Santa Fe that were focused on stormwater issues and water quality ?
 - a. Yes
 - b. No
 - c. Not sure

6. Do you recall receiving educational materials or corresponding directly with City staff (by phone, in person or at an event) regarding proper stormwater management or water quality issues?
 - a. Yes
 - b. No

7. Have you seen any signs or literature pertaining to proper pet waste disposal or have you heard of “Scoop the Poop” or “Keep It Clean, We’re ALL Downstream”?

- a. Yes
- b. No
- c. Not Sure

8. Are you aware the City of Santa Fe has a Stormwater Hotline and website/e-mail address to report storm water pollution, maintenance and repair needs, and to ask stormwater related questions?

- a. Yes
- b. No

9. Where do you currently get most of your information about stormwater and the water quality of the Santa Fe River and contributing arroyos?

- a. City of Santa Fe website
- b. Water bill insert
- c. Internet
- d. Newspapers
- e. Family, friends or word of mouth
- f. Personal observation/monitoring
- g. Don't receive information

10. Where would you prefer to get most of your information about stormwater and the water quality of the Santa Fe River and contributing arroyos?

- a. City of Santa Fe website
- b. Water bill insert
- c. Internet
- d. Newspapers
- e. Social Media
- f. Email
- g. Not interested in receiving information

11. Did you know the City of Santa Fe has stormwater utility fee? Do you know how it is used?

- a. Yes, I know the City charges a stormwater fee and I know how the City spends the funds
- b. Yes, I know we have a stormwater fee but I don't know how the monies are used
- c. No, I did not know of the stormwater fee or how the money is spent

Yard Maintenance

12a. Do you have a lawn (grass) or landscaping that you maintain? (if no skip to question 13)

- a. Yes
- b. No

12b. When you maintain your property, what do you do with the green waste (grass clippings, pruned branches, leaves, etc.)?

- a. Leave the clippings on the grass or spread them in the yard
- b. Collect them and put them in a trash bag
- c. Dump them into the gutter, ditch or arroyo

- d. Compost them
- e. Other

12c. Do you know there are guidelines concerning the timing, frequency and runoff potential of applying fertilizer?

- a. Yes
- b. No
- c. I know about some but not all
- d. I'd like to learn more

Vehicle Maintenance

13a. Do you have a car, truck or other vehicle (if no skip to question 14)?

- a. Yes
- b. No

13b. Where do you wash your vehicle?

- a. Wash it at home
- b. Take it to a carwash
- c. I don't wash my vehicle

13c. When you wash your vehicle at home, where does the wash-water flow?

- a. Stays on my property and infiltrates (soaks in)
- b. Flows off my property into the street or arroyo
- c. Flows off my property but does not enter street or arroyo
- d. It varies
- e. I don't wash my vehicle at home

13d. When you change your vehicle's oil at home, how do you dispose of the used oil?

- a. Put it in the garbage
- b. Pour it in the storm drain, into the yard/empty lot or in a ditch
- c. Take it somewhere to be recycled
- d. Other (specify)_____

Pet Waste Disposal

14a. Do you pick up your dog's waste (from your yard, streets/sidewalks, open space)?

- a. Always
- b. Sometimes
- c. Rarely
- d. Never
- e. I don't have a dog (skip to question 13)

14b. Do you walk your dog in an arroyo or park that has a bag dispenser or trash can?

- a. Yes, there is a trash can but no bag dispenser
- b. Yes, there are both
- c. I walk my dog in a public space without access to a trash can and bag dispenser (please tell us where this is)
- d. I do not walk my dog

Stormwater Conveyance Facilities

15a. Have you experience flooding or standing water near your home or neighborhood?

- a. Yes
- b. No

15b. When it does flood, where does the water come from?

- a. The street
- b. A drain way (arroyo, acequia, storm pipe) in the yard or nearby
- c. Houses/lots upstream
- d. I don't know

15c. Did you know that placing anything within the channel of the Santa Fe River, an arroyo or drainage is illegal, regardless if it is natural (green waste, pet waste, soil/fill) or not (chemicals, trash and debris, etc.)?

- a. Yes
- b. No

16. How long have you lived in Santa Fe?

17. What subdivision/area of the city do you live in?

18. How long have you lived in your current location?

DRAFT

3 Simple Steps to Reduce Pet Waste Pollution

1. **Plan** — carry bags with you when you walk your pet.
2. **Pick up** waste — place the bag over your hand, pick up the waste, turn it inside out and tie.
3. **Dispose** of the waste by flushing it (without the bag), burying it, or putting it in the trash so it will go to a landfill.

Pet waste bags can now be found at many spots throughout the city. Keep an eye out for pet waste bags at trailheads and parks when you are walking your dog.



Support A Living River
SANTAFENM.GOV / RIVERFUND



Protect Our River and Arroyos:



Keep it Clean--
We're ALL
Downstream

http://www.santafenm.gov/MS4_Cooperative

3 simple steps to reduce
pet waste pollution

How Does Pet Waste Affect Rivers?

When it rains, pet waste that has been left on the ground washes into storm drains, arroyos and rivers. The waste, along with the bacteria and other pollutants that it carries, does not get treated before it enters a water body. Just because storm drains, arroyos, and some rivers aren't always flowing, doesn't mean it won't contribute to pollution during a future rain event.



A day's worth of waste from just one large dog can contain 7.8 billion fecal coliform bacteria.

THE FACTS:

- The organic matter in pet waste can degrade water quality by using up oxygen as it decomposes. This depletes the oxygen that fish and other aquatic life need to live. Nutrients from pet waste can also contribute to the growth of algae, further reducing oxygen levels.
- Pet waste can be a source of parasites and infections for other pets and for children who play outside. Contact with pet waste can cause illnesses such as giardia and salmonella.
- Pet waste contributes to the high bacteria levels that make rivers and lakes unsafe for both humans and their pets.



Help keep our rivers & arroyos clean!

You Can Prevent Pet Waste Pollution!

Pet waste smells, it attracts flies, and stepping in it is annoying! Picking up your pet's waste in yards and public spaces is important and it is a common courtesy — in Santa Fe it is also law. Doing your part means cleaner and healthier neighborhoods and less water pollution.



Scooping the poop is the law in Santa Fe (City Ordinance 5-7.6)

WHAT YOU SHOULD DO:

- Always clean up after your pet and properly dispose of waste.
- Encourage other pet owners to be responsible by picking up after their pets.
- Consider yourself an environmental steward - bring extra bags with you to pick up another's waste left on the ground.

WHAT YOU SHOULD NOT DO:

- Never dispose of pet waste near rivers, arroyos or storm drains.
- Pet waste should not be composted or used as a garden fertilizer.



Large or Small — Scoop It All!

- It doesn't matter if your pet is large or small — poop is poop!
- Pet waste carries bacteria and other contaminants; these pollutants are carried straight to arroyos, streams, lakes and rivers every time it rains or snow melts.
- Pet waste is more than smelly and unsightly. It can make people and animals sick.
- Leaving pet waste in your own yard can attract flies and it smells.
- Pet waste may contain parasites that can make your children sick if they come into contact with it.
- Even though pet waste may seem to just "go away" it can still cause pollution.

What you leave on land...



...ends up in the water.

Be an upstream thinker. Please scoop.



40% of pet owners don't pick up their pet's waste? Let's work together to Keep it Clean, Santa Fe!

Stormwater Story Map Group Update:

The Stormwater Story Map working group is creating an interactive, online communication tool for the City which hopes to educate people about what stormwater is, how it can be mitigated, what the city is doing to mitigate it (e.g., raingardens) and how it becomes a part of the Santa Fe River watershed. Eventually the tool may be used to advertise citizen science (water quality monitoring) events, meetings, etc. It should help to meet some of the requirements of the City's MS4 permit. The map is in draft phase and the working group is currently collecting information to help them tell the stormwater "story".

Here's an example story map highlighting the stormwater topic:

<https://ottawa.maps.arcgis.com/apps/Cascade/index.html?appid=ba1269c787c443f6b3b358c3c1067aca>